

GCF

$$3x^2 + 6x$$

$$3x(x+2)$$

Regular $ax^2+bx+\underline{c}$

ex 2:

$$x^2 - 2x - 8$$

$$(x-4)(x+2)$$

ex 3:

$$6x^2 - 11x - 10$$

$$6x^2 - 15x + 4x - 10$$

$$3x(2x-5) + 2(2x-5)$$

$$(2x - 5)(3x + 2)$$

$$ax^2 + bx + c$$
$$\begin{array}{r} -8 \\ -4 \end{array}$$
$$8^{-2}$$

+c same sign
-c different signs

Stretch

~~$$\begin{array}{cc} & -60 \\ -15 & & 4 \\ & -11 \end{array}$$~~

ex 4:

$$8x^2 + 14x + 5$$

$$8x^2 + 10x + 4x + 5$$

$$2x(4x+5) + 1(4x+5)$$

$$(2x+1)(4x+5)$$

~~$$\begin{array}{cc} 40 & \\ 10 & 4 \\ & 14 \end{array}$$~~

Patterns

Patterns

i. $a^2 - b^2 = (a+b)(a-b)$

ii. $a^2 - 2ab + b^2 = (a - b)^2$

iii. $a^2 + 2ab + b^2 = (a+b)^2$

ex 5:

$$4m^2 + 4m + 1$$

Is perfect sq?

$2m$

$$2(2n+1) = 4n$$

+ Square Trinomial

$$(2m+1)^2$$

ex 6:

$$x^3 - 12x^2 + 36x$$

$$x(x^2 - 12x + 36)$$

$$x(x-6)^2$$

ex 7:

$$y^2 - 49$$

$$(y-7)(y+7)$$

ex 8:

$$4x^{10} - 9y^8$$

$$(2x^5)^2 - (3y^4)^2$$

$$(2x^5 - 3y^4)(2x^5 + 3y^4)$$

Any even
power
is a perfect
square

ex 9:

$$4x^{2n} - 16y^{4n}$$

$$4(x^{2n} - 4y^{4n})$$

$$(x^n)^2 - (2y^{2n})^2$$

$$4(x^n - 2y^{2n})(x^n + 2y^{2n})$$

If a problem is not factorable,
then write:

Prime

2 New Patterns

iv. $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$
Sum of cubes

v. $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$
Difference of cubes

$$\begin{array}{ll} 1^3 = 1 & 4^3 = 64 \\ 2^3 = 8 & 5^3 = 125 \\ 3^3 = 27 & 6^3 = 216 \end{array}$$

ex 10:

$$8u^3 + v^3$$

$$\underset{a}{(2u)}^3 + \underset{b}{(v)}^3$$

$$(2u + v)(4u^2 - 2uv + v^2)$$

HW:

p242-243

15-39odd